

**We claim:**

- 1. A method for detecting a Norwalk-Like Virus (NLV) in a biological sample, preferably a stool sample from a human, comprising the steps of:**
  - a) obtaining a biological sample suspected of containing a NLV;**
  - b) contacting the biological sample with at least one blood antigen target to allow formation of a complex of the NLV with the blood antigen; and**
  - c) detecting the NLV-blood antigen complex.**
- 2. The method according to Claim 1 wherein the biological sample suspected of containing a NLV is contacted to each blood antigen target individually.**
- 3. The method according to Claim 1 wherein the step (c) of detecting the NLV blood antigen complex comprises the steps of:**
  - i) washing away the non-binding material of the biological sample from the NLV-blood antigen complex;**
  - ii) contacting the NLV-blood antigen complex with a NLV antibody that binds at an epitope of the NLV;**
  - iii) washing to remove un-bound NLV antibody from the NLV-blood antigen complex; and**
  - iv) detecting the NLV antibody.**
- 4. The method according to Claim 1 wherein the step (c) of detecting the NLV-blood antigen complex comprises the steps of:**
  - i) washing away the non-binding material of the biological sample from the blood antigen target;**
  - ii) contacting the blood antigen target with an anti-antigen antibody that binds to the antigen-determinant epitope of the blood antigen;**
  - iii) washing to remove un-bound anti-antigen antibody from the blood antigen target; and**
  - iv) detecting the anti-antigen antibody.**

5. A kit for detecting a NLV in a biological sample, comprising:
  - a) a container for holding a biological sample suspected of containing a NLV, the container comprising a media having affixed at least one blood antigen selected from the group consisting of H antigen, A antigen, B antigen, Le<sup>b</sup> antigen, Le<sup>a</sup> antigen, and mixtures thereof, or a functionally equivalent molecule thereof, and capable of complexing with a NLV; and
  - b) an assay for the detection of a complex of the NLV and the blood antigen.
6. The kit according to Claim 5 wherein the assay is selected from an NLV antibody that binds to an epitope of the NLV of the NLV-blood antigen complex, and an anti-antigen antibody that binds to the antigen-determinant epitope of each selected blood antigen.
7. A method for detecting a histo-blood group antigen in a biological sample, comprising the steps of:
  - a) obtaining a biological sample containing a histo-blood group antigen;
  - b) contacting the biological sample with at least one NLV target to allow formation of a complex of the blood antigen with the NLV; and
  - c) detecting the blood antigen-NLV complex.
8. A kit for use in determining the histo-blood group of a human, comprising:
  - a) a container for holding a biological sample from a human, the container comprising a media containing at least one Norwalk-Like Virus (NLV) capable of complexing with an ABO histo-blood group antigen; and
  - b) an assay for the detection of a complex of the at least one NLV and the antigen.
9. A method of identifying a first test compound that inhibits the binding activity of a NLV, preferably selected from the group consisting of strain 387, strain MOH, strain NV, strain 207, strain 02-1419, and mixtures thereof, with a standard compound, preferably a histo-blood group antigen, the method comprising the steps of:

- a) contacting a NLV target with a test compound selected from the group consisting of a protein, a polypeptide, an oligosaccharide, a natural compound, and poly- and monoclonal antibodies, and mixtures thereof;
  - b) contacting the NLV with a standard compound that is known to be bind with a determinant binding site of the NLV; and
  - c) determining whether the binding of the standard compound is decreased in the presence of the test compound, the decrease in binding being an indication that the test compound inhibits the binding activity of the NLV with the standard compound.
10. The method according to claim 9 wherein two or more of the NLV targets are contacted independently.
11. A method of identifying a test compound that inhibits the binding activity of a histo-blood group antigen, preferably selected from the group consisting of H antigen, A antigen, B antigen, and Le<sup>a</sup> antigen, Le<sup>b</sup> antigen, and mixtures thereof, with a standard compound, preferably a Norwalk-Like Virus, the method comprising the steps of:
- a) contacting a histo-blood group antigen target with a test compound, preferably selected from the group consisting of an oligosaccharide, a protein, a polypeptide, and poly- or monoclonal antibodies;
  - b) subsequently contacting the histo-blood group antigen with a standard compound that is known to bind at the antigenic determinant epitope of the histo-blood group antigen; and
  - c) determining whether the binding of the standard compound is decreased in the presence of the test compound, the decrease in binding being an indication that the test compound inhibits the binding activity of the histo-blood group antigen with the standard compound.
12. A kit for use in identifying a compound that inhibits the binding activity of a NLV with a standard compound, the kit comprising:
- a) a container for holding a first sample of a test compound, and a second sample of a standard compound, the container comprising a media

- containing a NLV capable of complexing at its determinant binding site with the standard compound;
- b) a means for contacting the NLV with each of the test compound and the standard compound; and
  - c) an assay for detecting a complex of the standard compound with the NLV.
13. A pharmaceutical composition comprising at least one compound selected from the group consisting of a protein, peptide, oligosaccharide, naturally existing or synthetic compound, a functionally equivalent molecule, and mixtures thereof, which binds to a NLV with the binding specificity of the antigenic determinant of a human histo-blood group antigen, preferably selected from the group consisting of H, A, B, Le<sup>a</sup>, and Le<sup>b</sup> antigens.
14. The composition according to claim 13 wherein the binding specificity is of a structure selected from: the Fuc- $\alpha$ 1 $\rightarrow$ 2 structure of the human histo-blood group H antigen; the GalNAc- $\alpha$ 1 $\rightarrow$ 3 structure of the human histo-blood group A antigen; the Gal- $\alpha$ 1 $\rightarrow$ 3 structure of the human histo-blood group B antigen; the Fuc- $\alpha$ 1 $\rightarrow$ 3/4 structure of the human histo-blood Le<sup>a</sup> antigen; and the Fuc- $\alpha$ 1 $\rightarrow$ 2 structure of the human histo-blood Lewis b (Le<sup>b</sup>) antigen.
15. A pharmaceutical composition comprising a compound selected from the group consisting of a protein, peptide, oligosaccharide, natural compound, a functionally equivalent molecule, and mixtures thereof, which competitively inhibits the binding of a NLV with a native histo-blood group antigens of a human host, preferably by binding to the NLV, and optionally a pharmaceutically acceptable carrier.
16. A medicament comprising:
- a) at least one carbohydrate compound, selected from:
    - 1) at least one carbohydrate selected from the group consisting of fucosyl  $\alpha$ 1 $\rightarrow$ 3/4 N-acetyl glycosyl globoside (F3AG), a stabilized, synthetic F3AG analogue, and mixtures thereof, in an amount that inhibits binding of NLV strain 207 to gastroepithelium of a non-secretor individual;

- 2) at least one carbohydrate selected from the group consisting of fucosyl  $\alpha 1 \rightarrow 2$  galactose globoside (F2G), a stabilized, synthetic F2G analogue, and mixtures thereof, in an amount that inhibits binding of NLV strain 387 to gastroepithelium of a secretor individual;
  - 3) at least one carbohydrate selected from the group consisting of N-acetyl galactosyl  $\alpha 1 \rightarrow 3$  galactosyl globoside (AG3G), N-acetyl galactosyl  $\alpha 1 \rightarrow 4$  galactosyl globoside (AG4G), a stabilized, synthetic AG3G analogue, a stabilized, synthetic AG4G analogue, and mixtures thereof, in an amount that inhibits binding of NLV strain MOH to gastroepithelium of a secretor individual;
  - 4) at least one carbohydrate selected from the group consisting of galactosyl  $\alpha 1 \rightarrow 3$  galactosyl globoside (G3G), galactosyl  $\alpha 1 \rightarrow 4$  galactosyl globoside (G4G), a stabilized, synthetic G3G analogue, a stabilized, synthetic G4G analogue, and mixtures thereof, in an amount that inhibits binding of NLV strain MOH to gastroepithelium of a secretor individual; and
  - 5) mixtures thereof; and
- b) a pharmaceutically acceptable diluent, carrier or excipient.
17. Use of a compound in a medicament or pharmaceutical for the prevention and treatment in a mammal of an infection by a NLV, wherein the compound has the binding specificity of the antigenic determinant of a human histo-blood group antigen.
18. The use of a compound according to Claim 17 wherein the compound is at least one carbohydrate compound selected from:
- 1) at least one carbohydrate selected from the group consisting of fucosyl  $\alpha 1 \rightarrow 3/4$  N-acetyl glycosyl globoside (F3AG), a stabilized, synthetic F3AG analogue, and mixtures thereof, in an amount that inhibits binding of NLV strain 207 to gastroepithelium of a non-secretor individual;
  - 2) at least one carbohydrate selected from the group consisting of fucosyl  $\alpha 1 \rightarrow 2$  galactose globoside (F2G), a stabilized, synthetic F2G analogue, and

mixtures thereof, in an amount that inhibits binding of NLV strain 387 to gastroepithelium of a secretor individual;

- 3) at least one carbohydrate selected from the group consisting of N-acetyl galactosyl  $\alpha 1 \rightarrow 3$  galactosyl globoside (AG3G), N-acetyl galactosyl  $\alpha 1 \rightarrow 4$  galactosyl globoside (AG4G), a stabilized, synthetic AG3G analogue, a stabilized, synthetic AG4G analogue, and mixtures thereof, in an amount that inhibits binding of NLV strain MOH to gastroepithelium of a secretor individual;
- 4) at least one carbohydrate selected from the group consisting of galactosyl  $\alpha 1 \rightarrow 3$  galactosyl globoside (G3G), galactosyl  $\alpha 1 \rightarrow 4$  galactosyl globoside (G4G), a stabilized, synthetic G3G analogue, a stabilized, synthetic G4G analogue, and mixtures thereof, in an amount that inhibits binding of NLV strain MOH to gastroepithelium of a secretor individual; and
- 5) mixtures thereof.